

ABSTRACT

An optical waveguide having a working mode with a tailored dispersion profile, the waveguide including: (i) a dielectric confinement region surrounding a waveguide axis, the confinement region comprising a photonic crystal having at least one photonic bandgap, wherein during operation the confinement region guides EM radiation in a first range of frequencies to propagate along the waveguide axis; (ii) a dielectric core region extending along the waveguide axis and surrounded by the confinement region about the waveguide axis, wherein the core supports at least one guided mode in the first frequency range; and (iii) a dielectric dispersion tailoring region surrounded by the confinement region about the waveguide axis, wherein the dispersion tailoring region introduces one or more additional modes in the first range of frequencies that interact with the guided mode to produce the working mode.